

Appl. No. : 09/989,684
Filed : November 20, 2001

REMARKS

Prior to entry of this amendment, Claims 9-31, 77-79, and 81 are pending. By this amendment, (1) Claims 10, 11, 13, 14, 79, and 81 are canceled; (2) Claims 9, 12, 15-19, 21-23, 25, 77, and 78 are amended, and (3) Claims 91-94 are added. Thus, Claims 9, 12, 15-31, 77, 78, 80, and 91-94 are pending in this application. In view of the above amendments and the following remarks, Applicant respectfully requests consideration of all pending claims in this application.

Discussion of Provisional Double Patenting Rejections

On page 2 of the Office Action, the Examiner provisionally rejects Claims 9-31, 77-79 and 81 under the judicially created doctrine of obviousness-type double patenting. Applicant respectfully submits that this rejection will be addressed if this rejection becomes non-provisional.

Discussion of Claim Rejections Under 35 U.S.C. §§ 102(e) and 103(a)

On page 3 of the Office Action, the Examiner rejected Claims 9-14, 25-31, and 77-79 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,030,581, to Virtanen (hereinafter "Virtanen"). On page 5 of the Office Action, the Examiner rejected Claims 15-24 and 81 under 35 U.S.C. § 103(a) as being unpatentable over Virtanen.

Claims 9 and 15-31

Claim 9, as amended, recites:

An optical disc comprising:

an entry chamber positioned proximate a center of the optical disc and configured to hold a specimen having disperse particles and particle agglutinants;

a separation structure positioned between the entry chamber and the collection zone, the separation structure comprising a plurality of structures that define gaps therebetween, a width of the gaps being less than or equal to a width of the particle agglutinants, the separation structure being configured to separate particle agglutinants from the disperse particles when the specimen is urged toward the separation structure by centrifugal force created when the optical disc is rotated; and

a tracking groove positioned at least partly beneath the entry chamber and proximate the separation structure, wherein particle agglutinants in the entry

chamber can be quantified by determining an amount of the tracking groove that is at least partly covered by particle agglutinants.

The combination of features recited in amended Claim 9 is not believed to be taught in the cited art. For example, amended Claim 9 recites “a tracking groove positioned at least partly beneath the entry chamber and proximate the separation structure, wherein particle agglutinants in the entry chamber can be quantified by determining an amount of the tracking groove that is at least partly covered by particle agglutinants.” Virtanen does not teach or suggest use of a tracking groove in quantifying partial agglutinants. In fact, Virtanen does not discuss tracking grooves. The portion of Virtanen cited by the Examiner as teaching that an “optical disk includes a substrate including tracking grooves (capillary ducts, col. 5, lines 21-23)” states only that “capillary ducts and fluid storage and retention compartments may be machined into the optical disks.” As stated in Virtanen, “the disk . . . fluid transfer means, such as one or more capillary ducts.” Virtanen, Co. 2, lines 25-26. Accordingly, while these capillary ducts may be used for transfers of fluids, Virtanen does not teach or suggest use of capillary ducts in quantifying particle agglutinants. Thus, for the reasons stated above, the cited art fails to teach or suggest at least “a tracking groove positioned at least partly beneath the entry chamber and proximate the separation structure, wherein particle agglutinants in the entry chamber can be quantified by determining an amount of the tracking groove that is at least partly covered by particle agglutinants.”

In addition, amended Claim 9 recites “an entry chamber ... configured to hold a specimen having disperse particles and particle agglutinants.” Virtanen states that the “disk may have one or more sample entry ports to deliver sample fluid to the assay sector.” Virtanen, Column 2, lines 29-30. However, Virtanen does not teach or suggest “an entry chamber ... configured to hold a specimen having disperse particles and particle agglutinants.”

Also, amended Claim 9 recites “a separation structure ... comprising a plurality of structures that define gaps therebetween, a width of the gaps being less than or equal to a width of the particle agglutinants.” This feature is not believed to be taught in the cited art. Virtanen discloses that “[i]t may be necessary to separate the analyte from the sample, at least partially, and this may be done in a sample separation segment designated generally as 17.” *Virtanen*, Column 5, lines 35-38. Virtanen also states that “[f]ilters may be used to remove large particles, such as cells, dust, etc. from the soluble sample. Accordingly, filters are most preferably included

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as part of the sample inlet compartment. Filters may be formed from porous plastic glass, cross-linked cotton or cellulose, etc. These materials 40 may be in the shape of rods or similar shapes depending on the particular use to which they are being put.” *Id.*, Column 7, lines 36-42. However, Virtanen does not teach or suggest “a separation structure ... comprising a plurality of structures that define gaps therebetween, *the distance between the gaps being less than or equal to a width of the particle agglutinants*,” as recited in amended Claim 9.

The Examiner notes that “[i]t would have been obvious to modify Virtanen to include such a separation zone as described above because it is known in the art of particle separation that creating slits or ribs that decrease in size allows for larger particles to be separated from the sample and allowing smaller particles to continue on through the separation zone.” However, Applicant notes that, in order to establish a *prima facie* case of obviousness a three-prong test must be met. First, there must be some suggestion or motivation, either in the references or in the knowledge generally available among those of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success found in the prior art. Third, the prior art reference must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). Applicant respectfully submits that Virtanen does not include a suggestion or motivation to modify the filter to comprise “a separation structure ... comprising a plurality of structures that define gaps therebetween, a width of the gaps being less than or equal to the width of the particle agglutinants,” as recited in amended Claim 9. Accordingly, Applicant respectfully requests withdrawal of this obviousness rejection.

Each of the above cited features listed above is believed to be new and non-obvious in view of the cited art. In addition, the combination of the features recited in Claim 9 is believed to be patentable over the cited art. Accordingly, reconsideration of Claim 9 is respectfully requested.

Claim 77 and 78

Claim 77 recites:

An optical disc for separating disperse particles from particle agglutinants, comprising:
a plurality of tracks disposed on an outer periphery of the optical disc; and
a main chamber disposed between at least a portion of the plurality of tracks and a light detector, the main chamber comprising:
an entry chamber configured for accepting a sample; and

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a separation structure comprising solid components spaced apart to form gaps, the gaps being large enough to allow disperse particles to change position relative to the center of the disc by passing through the separation structure, the gaps being too small to allow particle agglutinants to pass through the separation structure;

wherein a quantity of disperse particles may be determined by using the light detector to count a number of the plurality of tracks that are at least partly covered by the disperse particles.

The combination of features recited in amended Claim 77 is not believed to be taught in the cited art. For example, Claim 77 recites “a plurality of tracks disposed on an outer periphery of the optical disc; and a main chamber disposed between at least a portion of the plurality of tracks and a light detector.” As discussed above with reference to Claim 9, Virtanen does not teach or suggest the use of tracks. It follows that Virtanen does not teach or suggest that a main chamber is “disposed between at least a portion of the plurality of tracks and a light detector.” In addition, Virtanen does not teach or suggest that “a quantity of disperse particles may be determined by using the light detector to count a number of the plurality of tracks that are at least partly covered by the disperse particles.”

Similar to Claim 77, Claim 78 recites “a plurality of tracks disposed proximate a central portion of the optical disc; [and] a main chamber disposed between at least a portion of the plurality of tracks and a light detector.” In addition, Claim 78 recites that “a quantity of particle agglutinates may be determined by using the light detector to count a number of the plurality of tracks that are at least partly covered by the particle agglutinates.” For at least the reasons discussed above with reference to Claim 77, Virtanen does not teach or suggest these features or combination of features. Reconsideration of Claims 77 and 78 is respectfully requested.

Claims 91-94

Claims 91-94 have been added to vary the scope of claims and do not include any new matter. Claim 91 recites “first and second separation structures ... configured to separate particle agglutinants from the disperse particles when the mixture is urged toward the separation structures by centrifugal force created when the optical disc is rotated.” The cited art does not teach at least these features and, accordingly, Applicant requests consideration of Claim 91.

Claims 12 and 15-31 depend from Claim 9. Accordingly, Applicant asserts that Claims 12 and 15-31 are patentable for at least the reasons discussed above with respect to Claim 9, as

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well as for their own patentable features. Reconsideration of Claims 12 and 15-31 is respectfully requested.

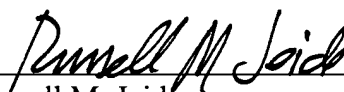
Summary

Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding rejections is respectfully requested. If the Examiner has any questions which may be answered by telephone, he is invited to call the undersigned directly.

Respectfully submitted,

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